UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/667,556	09/22/00	BURGER	A 016779/0154

HM12/0418

COLEY G SANDERCOCK
FOLEY LARDNER
WASHINGTON HARBOUR
3000 K STREET N W SUITE 500
WASHINGTON DC 20007-5109

EXAMINER	
FOLEY, S	
ART UNIT	PAPER NUMBER
1648	5

DATE MAILED: 04/18/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No.	Applicant(s)	
	09/667,556	BURGER ET AL.	
	Examiner	Art Unit	
	Shanon A. Foley	1648	

-- The MAILING DATE of this c mmunication appears on the cover sheet with the correspondence address --

Peri d f r Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disp sition of Claims

4)☒ Claim(s) 1-15 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-15 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

15)☒ Notice of References Cited (PTO-892)
16)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
17)☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
18)☐ Interview Summary (PTO-413) Paper No(s). _____ .
19)☐ Notice of Informal Patent Application (PTO-152)
20)☒ Other: Notice to Comply

DETAILED ACTION

Sequence Compliance

This application contains sequence disclosures that are encompassed by the definitions for nucleotide and/or amino acid sequences set forth in 37 C.F.R. § 1.821(a)(1) and (a)(2). However, this application fails to comply with the requirements of 37 C.F.R. §§ 1.821-1.825 for the reason(s) set forth on the attached Notice To Comply With Requirements For Patent Applications Containing Nucleotide Sequence And/Or Amino Acid Sequence Disclosures. Applicant is requested to return a copy of the attached Notice to Comply with the response.

The specification and claims are objected to for failing to adhere to the requirements of the sequence rules. Applicant must append SEQ ID Nos. to all mentions of specific sequences in the specification, see page 14, lines 12 and 14; page 15, lines 1, 3, 15-18; page 16, lines 5, 7-8, 10-11, and 16. See 37 CFR § 1.821(d).

Specification

The specification is objected to because of the following informalities: there is no brief description of the drawing number 5 showing table 1. Appropriate correction is required.

The amendment, submitted in paper no. 4 on 2/19/01, is objected to because part of the amendment to the specification has been hand-written.

Applicant is required to submit an appropriate amendment rectifying this deficiency.

Priority

Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Germany on 3/24/1998. It is noted, however, that applicant has not filed a certified copy of the instant application as required by 35 U.S.C. 119(b).

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is drawn to "avoidance" of the papillomavirus. It is assumed that Applicant intends to prevent papillomavirus tumor development since there is no way to avoid exposure to the virus.

Regarding claim 1, the phrase "if appropriate" renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Claim 1 is also drawn to suitable additives that may be in the medicament. It is unclear whether the additives are supposed to be devoid of papillomavirus epitopes or if the fusion protein containing L1 and E have no unspecific epitopes.

Claims 7 and 10 are drawn to the L1 or the E proteins being deleted proteins. Is a portion of the L1 or E protein deleted, or are the L1 or E proteins deleted from a papillomavirus?

Claim 9 recites the limitation "L" in line 11. There is insufficient antecedent basis for this limitation in the claim because the previous claims are drawn to "L1".

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 7-14 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Muller et al.

The claims are drawn to a medicament to treat or prevent human papillomavirus (HPV)-specific tumors comprising a fusion protein in the form of a capsid or capsomere that has one L1 protein and an E protein. The L1 protein has up to 35 amino acids deleted at the C-terminal end and E protein has up to 55 amino acids deleted at the C-terminal end.

Muller et al. teaches chimeric papillomavirus-like particles (CVLPs) that replace the 34 C-terminal amino acids of the L1 protein with various parts of the HPV 16 E7 protein. These protein fusions were analyzed for their ability to assemble into virus capsids. The E7 portion of the fusion protein included fragments derived from the C-terminal end, see figure 5 on page 103. Muller et al. teaches that extending the E7 insert beyond the first 55 amino acids leads to inefficient particle production, see the first paragraph of the first column on page 109. Muller et al. teaches that these chimeric CVLPs could be useful as a therapeutic and prophylactic vaccine and predicts that these particles will be able to induce a CTL response based on some preliminary data indicating that CTLs can be induced in mice after immunization with virus-like particles (VLPs) and CVLPs, see the last paragraphs of the first and second columns on page 108. Muller et al. incorporates L1 from HPV 16 and teaches that some HPV types with low malignant potential, i.e. HPV 11, induce laryngeal papillomas and should also be prevented, see the second paragraph of the first column on page 93. The teachings of Muller et al. anticipate claims 1 and 7-14.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 2-6 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Muller et al. as applied to claims 1 and 7-13 above, and further in view of Hines et al.

The claims are drawn to a medicament comprising fusion proteins from various papillomaviruses to treat carcinomas without an adjuvant.

See the teachings of Muller et al. above. Muller et al. does not teach administration of the subunit vaccine without an adjuvant or the various papillomaviruses that would be incorporated into the medicament.

However, Muller et al. teaches that VLPs are noninfectious because they are devoid of any DNA and lead to long-lasting protection against virus challenge, see the first two full paragraphs if the first column on page 94. Hines et al. teaches that VLPs are highly antigenic and protective in animal models and are ideal candidates for multivalent prophylactic vaccines against HPV infection, see the second paragraph of the second column on page 16 and the last paragraph on page 18. It would have been obvious for one of ordinary skill in the art at the time the invention was made to administer a CVLP or VLP papillomavirus vaccine without the use of an adjuvant due to the strong prophylactic properties taught by Muller et al. and Hines et al. Furthermore, it is conventional practice to administer vaccines by injection. Therefore, it is

conventional practice in the art to combine the subunit proteins in a buffer that is a stable environment for the proteins in the vaccine to facilitate administration.

Hines et al. teaches that HPV genotypes 16, 18, 45, and 56 are high-risk and are detected in 90% of invasive carcinomas of the cervix. Hines et al. teaches that incorporation of high-risk types 16, 18, 45, and 56 should theoretically prevent 70-80% of cervical carcinomas, see the paragraph bridging pages 16-17. One of ordinary skill in the art at the time the invention was made would have been motivated to combine various proteins from different papillomaviruses in to prevent as many different carcinomas caused by the various types of papillomaviruses. From the teachings of the references, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention because of the teachings of Muller et al. to produce CVLPs that incorporate an E protein and the prophylactic and the adjuvant-like stimulatory effects of papillomavirus subunit vaccines taught by Hines et al. Therefore, the invention as a whole is prima facie obvious at the time the invention was made, as evidenced by the references, especially in the absence of evidence to the contrary.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shanon A. Foley whose telephone number is (703) 308-3983. The examiner can normally be reached on 7:30-4:30 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Housel can be reached on (703) 308-4027. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-4242 for regular communications and (703) 308-4426 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0196.

Shanon Foley
April 17, 2001

MARY E. MOSHER
PRIMARY EXAMINER
GROUP 1800
1601